THE

VETERINARY JOURNAL

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SEPTEMBER, 1923.

Editorials

THE PROFESSORSHIP OF ANIMAL PATHOLOGY AT CAMBRIDGE

THE appointment of a duly qualified Veterinarian to the Chair of Animal Pathology in Cambridge University is as it should be, and the electors are to be congratulated upon the subject of their choice. Professor Basil Buxton is not only a gifted research worker, but one of the most popular of men amongst his colleagues (both medical and veterinary), and, indeed, all who have the privilege of his acquaintance. The ovation given to him on the occasion of the presentation of a canteen of plate, at the recent National Meeting, was, in itself, substantial evidence of this. His career has throughout, right from college days, been one of distinctive ability, and his organising capacity has been proved by the success to which he contributed so largely, of the Animal Serum Section of the laboratories of Messrs. Burroughs, Wellcome & Co. His connection with the Medical Research Council, although a very brief one, has been sufficient to make them show sufficient confidence in him to place several important investigations in his hands, notably the one into Botulism and Grass Disease, and the no less important one, to which the public have so largely contributed, of Distemper. In fact, so reluctant are his colleagues on the Medical Research Council to

lose his services that they have come to an amicable arrangement with the Cambridge University authorities whereby Professor Buxton will continue to act in a consultative capacity to the Medical Research Council with the title of "Director of the Field Laboratories at Hampstead."

The veterinary profession is well contented for a double reason, and well pleased over the result. A veterinary scientist has been selected to fill what is, after all, a veterinary scientist's position; and, secondly, a man has been selected in whose ability and good judgment his colleagues and fellow-men have confidence.

WHOLE-TIME SALARIES AGAIN

THE question of whole-time salaries for veterinary appointments has again come into prominence, and it is hoped that something will now really be done to place those who devote their lives to whole-time research and Public Health duties on at least an equality with those of the other learned professions whose work is similar. The following resolution, proposed by Mr. McIntosh at the recent National Veterinary Conference, was unanimously passed:—

> "That in view of the insecure and gravely unsatisfactory position of veterinary surgeons with regard to State service, not only at home, but in our Colonies, it is of urgent importance that a public inquiry be instituted for the purposes of investigating the whole matter and establishing better conditions of service and greater co-operation between the State and the practitioner." In dilating upon the subject, Mr. McIntosh said that "the emoluments allowed to those engaged under the Ministry of Agriculture were less than those offered by any other Department, fully qualified surgeons being offered £200 a year. It was a disgrace to the Department, which owed so much to the profession."

The Times and other lay papers gave full prominence to the resolution, and within the same week another lay paper gave prominence to the fact that the City Corporation of London had appointed a rat-catcher at a commencing salary of £7 7s. a week. "Some contrast" for our young graduates to ponder over! Viscount Lascelles, whose speech on the subject of the veterinary profession at the Harrogate Agricultural Show last year caused such a storm of correspondence, has this year proved his friendship for our profession in no unmeasured terms. At the luncheon held at this year's show Lord Lascelles again referred to the question of Veterinary Research, pointing out that although a grant of £25,000 had been made for buildings and

equipment, the salaries offered to the research assistants (as at present stated) did not offer as good a future prospect financially as did certain appointments in the Colonial service, and that therefore there was risk of losing the services out of England of good and ably trained men just at a time when their experience would begin to carry weight. Positions such as these ought to be well enough paid to attract the best brains in our profession, and the successful applicant should feel that he has an appointment for life. Money is, at the present day, scarcely worth two-thirds of what it was before the war, and £300 a year, although perhaps just sufficient for the needs of the newly graduated, should show a future prospect of increase beyond a limit of £360. Even the man who starts at £400 and rises to £600 is none too well paid, and the appointment of Assistant Director with a salary of £800 a year can only be obtained by one.

Comparing similar positions in the medical world, one finds that in every detail the whole-time man has an incomparably better prospect; not only a better start, but an infinitely better scale of increase and a much larger "bunch of carrots" at the finish. The discrepancy between the State salaries of the two professions is too wide, and if only the individual members of the veterinary profession will back up the National Veterinary Association Council and refuse to apply for any ill-paid, whole-time appointment, the game will be in their own hands.

So long, however, as there are applicants for £150 or £200 a year jobs, and these applicants are accepted as of sufficient calibre of brain to carry out the professional duties required of them, so long will these low salaries be offered and the status of the profession be dragged down to a level, as regards salary, which is much lower even than that of a rat-catcher.

THE "FIELD" DISTEMPER FUND

THE first report of the "Field" Distemper Fund has just been issued, and the further attempt which is now being made into the finding of the cause, prevention, and cure of this widespread disease, has made a good and careful start. Perhaps, like others which have preceded it, the research may be doomed to failure, but, as stated by Major-General Sir William Leishman, K.C.M.G., C.B., F.R.S., the Chairman of the Scientific Investigation Committee, "whatever may be the ultimate success in discovering and defining the essential cause of distemper, it is certain that much useful knowledge will be acquired about the propagation and method of spread of the disease, and a very serious attempt will be made by the investigators

to discover more satisfactory methods for the prevention and control of canine distemper." The report, which will be issued every six months to all annual subscribers of two guineas or more, deals with the work which has been done up to the present, and, in the words, "I am to add the Council's warm recognition of the generous help given by the veterinary profession in England and elsewhere, both in advice and subscriptions," Sir Theodore Cook (the Editor of the *Field* and Hon. Secretary of the Fund) pays a warm tribute to the help and encouragement accorded by the veterinary profession.

The test will be a tedious one, and probably occupy some years, but if it *can* be accomplished successfully it is probable that it will open up a new method of study which will bring into subjection a whole group of diseases, of men as well as of animals, and thus be another added instance of the benefits of the study of Pathology from the Comparative (or Veterinary) aspect, instead of merely confining that study solely to the part which concerns man.

THE "NATIONAL" AND THE "AMERICAN" VETERINARY MEETINGS

THE Yorkshire Meeting has passed, and not only does its pleasant memory remain but the good it has stimulated will carry us on for at least another year. It now remains for our Scottish friends (the next meeting is to be held in Aberdeen) to be on their mettle to equal (or try to beat) it.

Our Yorkshire *confrères* "did us proud," for the National Association had a real Yorkshire welcome from start to finish. No hitch whatever occurred (other than the clashing of dates with the Dublin Horse Show, for which they were not responsible), and the greatest credit is due to the organizing Secretary, Mr. Henry Good, and the Provisional Committee. We had, too, representatives of South Africa and the United States of America, in the presence of Sir Arnold Theiler and Dr. Septimus Sisson, the latter of whom came as a delegate of the American Veterinary Association, and was unanimously elected an Honorary Member of the National.

It is to be hoped now that the suggestion put forward at the Council Meeting of the National last year (that delegates be invited from foreign veterinary associations) has become a reality and has been responded to, other distinguished foreigners will visit our Annual Gathering, and that we too shall reciprocate by sending official delegates to visit the meetings of our colleagues in Europe and America.

Such interchanges of courtesy cannot but be for good. It is interesting to note from the appended abstract of the titles of papers

taken from the *Proceedings of the American Veterinary Medical Association* this year in Montreal, what subjects are of mutual interest to our American *confrères* and ourselves. The professional programme is too long to give *in extenso*, but the following headings will, we are sure, be of interest to our readers :—

Cæsarian Section in the Cow ; Sterility of Mares ; The Serum Therapy of Glanders, with Special Reference to Glanders in Man ; Controlled Vaccination Experiments on Cattle with *Bacterium abortus* ; Stringhalt Operation ; Ridgling Operation—Fistula of the Withers ; Demonstration on Sterile Cows ; Removal of the Udder ; Cervical Surgery ; Cæsarian Section in the Bitch. Spaying—cat ; The Prevention of Losses in Live Stock in Transit and Ways and Means for the Reduction of Bruised Meats (Motion Pictures) ; Skin Diseases in the Dog ; Poultry Diseases ; Practical Observations on Some Common Diseases of the Dog and Other Laboratory Animals ; Some Laboratory Findings and Conclusions Regarding the Bang Abortion Organism which Puzzle Clinicians ; Corpus Luteum of the Ox Ovary in Relation to the Estrous Cycle ; Anæsthesia, General and Local ; Mastitis, its Etiology and Pathology ; No-Lesion Tuberculin-Reacting Cattle ; The Practical Value of Serological Tests in the Control of Infectious Abortion.

General Articles

OBSERVATIONS ON EFFECT OF SODIUM MORRHUATE AND DISTEMPER VACCINE ON DISTEMPER IN CATS

By E. H. HANKIN, Sc.D.,
India.

Introduction.

The following paper should be regarded, not as an account of a research, but merely as a diary of casual observations made by one who is not a bacteriologist.

A number of cats, generally six or eight, are kept in the Agra laboratory, and are used in testing for datura. For several years past they have been liable to outbreaks of distemper, a disease which, in its acute form, is practically always fatal. My experience amounts to probably over two hundred cases of the disease. There is also a chronic form of the infection characterised by secretion from the eyes and nose. This lasts for months, and is apt to lead to an acute attack followed by death. Only one case of recovery from the chronic form is known to me.

There are reasons for suspecting that the infection may, in some instances at least, be carried by fleas.

All the cats treated with morrhuate and distemper vaccine have been mentioned in the following account :—

A.—Experiments with Old Process Morrhuate.

The vaccine employed was obtained from Messrs. Parke, Davis & Co., Bombay. It is a killed vaccine, labelled "prophylactic." Sodium morrhuate was obtained from Messrs. Smith Stanistreet & Co., Calcutta, and was used in a 3 per cent. sterilised solution.

I

Injection of distemper vaccine alone does not cure the disease either in its acute or its chronic form. On the contrary, it appears to produce increased susceptibility if administered for the first time when the infection is present.

For instance, a cat (A) was placed in a cage in which two cats had been attacked a few weeks earlier. A few days afterwards, on December 10, 1919, a slight dry secretion was present on its eyelids. The ordinary first dose of the vaccine, for dogs, is 200 million. It was given this amount three times, with the following results :—

CAT A.

Date.	*Treatment.*	*Condition.*
Dec. 10	200 million distemper microbes injected	Slight dry secretion on eyelids.
,, 11	.....	No change.
,, 12	200 million injected	Thick secretion of eyes and nose.
,, 13	200 million injected	Emaciated and fretful. Small appetite. More running from eyes and nose. Coughing.
,, 14	.....	Weak. Ate nothing.
,, 15	.....	Found dead.

Another cat (B) kept in the same cage received two doses only of the vaccine. It developed a cough, but showed no other symptom, and in a few weeks recovered. At the time of inoculation it had a trace of dried-up secretion on one eyelid.

When administered in the absence of the infection, the vaccine appears to produce immunity, thus further proving that the disease in question is distemper.

II

Injection of sodium morrhuate alone generally fails to cure the disease.

For instance, a cat (C) kept in the infected cage with the above-mentioned cats received four ½ cc. doses of morrhuate while ill. It died six days after the last dose. The symptoms were secretion from

the eyes only till two days after the last dose of morrhuate, when coughing began.

As a control to this cat, it may be mentioned that another cat (D) had become similarly infected at about the same time. During the period of the experiment it suffered from a running from one eye and from the nose, but the disease showed no signs of getting worse. On the 20th December, and also two days later, it was given doses of ½ cc. morrhuate solution, and during the following month showed no improvement in condition. It was then treated with a vaccin-morrhuate mixture, and cured.

Usually the effect of an injection of morrhuate is to make the cat temporarily worse. In the following exceptional case there was a slow recovery, and later an apparent relapse, from which the animal recovered on treatment with morrhuate-vaccine mixture :—

KITTEN J.

Date.	*Treatment.*	*Condition.*
1919		
June 10	.....	Inflammation of one eye.
,, 17	½ cc. morrhuate.....	Ditto.
,, 18	.....	Much discharge.
,, 19	½ cc. morrhuate.....	Much discharge.
,, 20	.....	Better.
,, 22	.....	Eyes still inflamed.
,, 24	.....	Inflammation of one eye only, which later subsided. Then good health till—
Sept. 17	.....	Loss of appetite.
,, 18	300 million distemper mixed with ½ cc. morrhuate	Loss of appetite.
,, 19	.....	Good appetite.
,, 21	.....	Diarrhœa.
,, 22	80 million distemper, with ½ cc. morrhuate	
,, 23	.....	Recovered.

III

Injection of sodium morrhuate mixed with distemper vaccine was seen to be followed by recovery from the acute form of the disease, even when only administered when the animal is seriously ill.

The following are instances :—

CAT E.

Date.	*Treatment.*	*Condition.*
1919		
Feb. 6	.....	Severe diarrhœa and weakness resulting in staggering gait.
,, 7	.....	Ditto.

Date.	*Treatment.*	*Condition.*
1919		
Feb. 8	.....	Worse. Cheeks hollow and body emaciated. It drank a small quantity of milk, but only on coaxing.
,, 9	200 million distemper, with ½ cc. morrhuate subcutaneously	Very weak and could scarcely stand. Its hind legs wetted by its dejecta.
,, 10	.....	Better. It drank a saucer full of milk in the morning. In the evening it was let out of its cage and followed me all over the house. It ate meat with appetite.
,, 11	.....	Diarrhœa stopped.
,, 14	.....	Diarrhœa returned. Put on milk diet.
,, 18	400 million distemper with 1 cc. morrhuate	Slight diarrhœa.
,, 21	1 cc. morrhuate	Severe diarrhœa.
,, 22	.....	Better.
,, 23	.....	Recovered. Given a small quantity of meat.
,, 25	.....	All right. Put on full meat diet.

(This cat disappeared some months later, probably having been killed by a dog.)

In my laboratory in acute cases of distemper, diarrhœa and rapid emaciation may be the only symptoms observable. No instances are known to me of diarrhœa in cats except those occurring in outbreaks of distemper. A characteristic symptom shown by this cat is that a cat suffering from the disease will smell its food, but will only eat any, and then only in small amount, when coaxed.

At the same time that this cat was taken ill another cat ran away and disappeared. A third cat ran away, but returned. It was suffering from diarrhœa, and continued to suffer from this complaint during the following two and a half months. It then disappeared.

The next cat taken ill had the following history:—

Date.	*Treatment.*	*Condition.*
1919		
Feb. 26	2 cc. morrhuate.....	It was languid, and ate food only on coaxing.
,, 27	300 million distemper, with 1 cc. morrhuate	Condition worse. The cat could scarcely stand, and seemed to be in pain when touched. It drank a few drops of milk when coaxed.
,, 28	.....	Better. It ate meat greedily.

Date.	*Treatment.*	*Condition.*
1919		
March 1	.....	Still slightly weak.
,, 5	300 million distemper, with ½ cc. morrhuate	Slight diarrhœa.
,, 6	.....	No diarrhœa.
,, 7	.....	Recovered.

(This cat disappeared some months later.)

The next occurrence of acute diarrhœa happened in October 1919. A kitten showed loss of appetite, but, at first, no other symptoms. It was apparently cured by mixed injections, but had a relapse as follows :—

KITTEN G.

Date.	*Treatment.*	*Condition.*
1919		
Sept. 17	.....	It had no appetite.
,, 18	100 million distemper, with ½ cc. morrhuate	
,, 19	.....	Good appetite.
,, 21	.....	Diarrhœa.
,, 22	160 million distemper, with ½ cc. morrhuate	
,, 23	.....	All right and remained in good health for five weeks ; then—
Oct. 28	50 million distemper, with ¼ cc. morrhuate. Ditto in evening	Suffering from diarrhœa. It had staggering gait from weakness and was delirious. It spent most of the day with its nose resting on the ground.
,, 29	50 million distemper, with ½ cc. morrhuate	Lively and hungry. Less diarrhœa.
,, 30	Ditto	Recovered.
,, 31	Ditto.	
1920		
April 25	.....	Fat and well. Previously to its illness it had been thin.

In its October attack this kitten must have been seriously ill. Cats usually only rest with nose on the ground very shortly before death in cases of this disease.

Two other kittens were attacked at about the same time as the last mentioned. They had been living in the same cage. One of them (H) died with severe diarrhœa on the 25th October. The other kitten (I) was noted on this day to be very emaciated as the result of diarrhœa. On the 26th October it had blood in its dejecta. On the following day, when very weak, it received a dose of morrhuate and distemper, and died on the night of the following day. As this kitten must have had severe diarrhœa for at least three days

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previously to the injection, and had shown blood in its dejecta, its death can scarcely be regarded as a disproof of the possible utility of the distemper-morrhuate mixture indicated by the preceding experiments.

The next appearance of the acute form of the disease was in February 1920. On the seventeenth of this month a cat was found dead with signs of emaciation and secretion from its eyes. Another cat was attacked at about the same time and had the following history :—

CAT Q.

Date.	*Treatment.*	*Condition.*
1920		
Feb. 15	.....	Diarrhœa.
,, 17	400 million distemper, with ½ cc. morrhuate	Emaciated. Ate a little meat on coaxing only.
,, 18	.....	It ate meat with appetite.
,, 19	.....	All right.
April 23	.....	Is strong and well.

IV

The chronic form of the disease appears to be curable by distemper-morrhuate injections.

The following are instances :—

CAT O.

Date.	*Treatment.*	*Condition.*
1920		
Jan. 5	400 million distemper, with 1 cc. morrhuate	One eye inflamed and secreting. Slight salivation.
6	.....	Eye better. No salivation.
,, 13	.....	Recovered.
April 25	.....	In good health.

CAT L.

Date.	*Treatment.*	*Condition.*
1919		
Mar. 29	.....	Discharge from nose and salivation.
April 1	200 million distemper, with ½ cc. morrhuate	Salivation worse.
3	.....	Salivation less.
,, 5	400 million distemper, with ½ cc. morrhuate	Salivation much less.
,, 10	600 million distemper, with ½ cc. morrhuate	Slight salivation.
,, 14	.....	Recovered.
,, 20	.....	Sent away. It had come to the lab. to have kittens.

This cat had three kittens, of which two became infected. They

were treated with vaccine-morrhuate mixture, with the following results :—

KITTEN M.

Date.	*Treatment.*	*Condition.*
1919		
April 7	.....	Slight discharge from eyes.
„ 8	.....	Ditto.
„ 9	.....	Ditto.
„ 10	100 million distemper, with ¼ cc. morrhuate	Ditto.
„ 13	.....	Better.
„ 14	200 million distemper, with ½ cc. morrhuate	Better.
„ 18	.....	Recovered.

On the 17th June this kitten received an injection of 100 million distemper bacilli. On the 19th June it had a discharge from nose and eyes, which got less, but slight inflammation of one eye persisted. On the 17th July it was given a dose of morrhuate (½ cc.). The secretion from the eye got worse. On the 17th September it was found to have lost its appetite. It was then treated with distemper-morrhuate mixture, and it recovered.

On the 4th February, 1920, it had a relapse, from which it recovered after a dose of the same mixture.

It had a more severe relapse in March. On returning from a holiday I found it weak and emaciated with complete loss of appetite, diarrhœa, and secretion from eyes and nose. It recovered by the end of the month after six doses of distemper-morrhuate.

The other infected kitten had the following fate :—

KITTEN N.

Date.	*Treatment.*	*Condition.*
1919		
April 10	100 million distemper, with ½ cc. morrhuate	All right.
„ 13	.....	One eye inflamed.
„ 14	200 million distemper, with ½ cc. morrhuate	
„ 18	.....	Recovered.

On the 10th June this kitten had a relapse, which was treated by injections of morrhuate alone. It remained without improvement, thus giving a further proof that injections of morrhuate without vaccin cannot cure the diesase. On the 18th September it received a dose of the distemper-morrhuate mixture and recovered.

In January 1920 it was found to have a slight inflammation of one eye. It was treated with a series of doses of " curative " distemper vaccine and got worse, thus giving a proof that injections of this vaccine alone cannot cure the disease.

On the 12th March it was found to be emaciated and having a thin secretion from eyes and nose. It was then cured by a series of injections of "curative" vaccine mixed with morrhuate. On the 3rd April it was noted to be fat and in good condition.

On the 9th April it had a slight secretion of one eye, which had dried up by midday. It was given a very large dose of curative and prophylactic vaccins mixed together in 1 cc. morrhuate solution. It disappeared, and was found dead and decomposed three days later.

The vaccine at that time supplied me by Messrs. Parke, Davis & Co. is made up in tabloids. The "curative" tabloid each contain, in millions, distemper 175, *Staphylococcus pyogenes albus* 25, *Staphylococcus pyogenes aureus* 25, *Streptococcus pyogenes* 25. The "prophylactic" tabloids contain 200 million distemper only. The last dose given to the above cat contained two prophylactic and three curative tabloids in 1 cc. morrhuate. It is a question whether it was not killed by the effect of an overdose.

V

Instances of failure to cure the disease by vaccine-morrhuate mixture.

The last kitten mentioned in the preceding paragraph, though originally cured, suffered relapses, and at length died. Possibly its death was due to the very large dose of vaccines employed. It may be noted that it had had doses of "curative" besides the ordinary prophylactic.

Two other of my cats that suffered from the disease showed no improvement after being treated with *curative* tabloids and morrhuate. One died and one of them disappeared, forty-three and forty-six days respectively, after the commencement of the treatment. In each of these cats the disease had been produced by injections of the distemper vaccin in presence of the infection. Each of them had been temporarily cured by injections of pure distemper mixed with morrhuate, but had had relapses treated without benefit by curative tabloids with morrhuate.

In the following instance an apparent cure was followed by several relapses in a kitten first treated by morrhuate alone :—

KITTEN P.

Date.	*Treatment.*	*Condition.*
1919		
June 11	.....	One eye inflamed.
,, 16	½ cc. morrhuate.....	Ditto.
,, 17	.....	Worse.
,, 19	½ cc. morrhuate.....	Secretion from inflamed eye.
,, 24	.....	Less inflammation.

Date.	*Treatment.*	*Condition.*
1919		
July 25	.....	Slight discharge.
Aug. 5	½ cc. morrhuate.....	Slight dried-up discharge.
,, 21	.....	Slight secretion.
,, 27	.....	Nearly well.
Sept. 5	150 million distemper, with ½ cc. morrhuate	Slight dried-up discharge.
,, 6	.....	Thick secretion from one eye.
,, 7	.....	Secretion less.
,, 9	.....	Recovered.

Afterwards the secretion reappeared six times. On each occasion it ceased after a dose of the distemper-morrhuate mixture. It only permanently recovered in the following November. It remained in good health up to the time of writing (April 1920).

VI

Summary of results obtained with morrhuate freshly made by the old process and mixed with distemper vaccine.

1. Neither sodium morrhuate nor distemper vaccine alone have any marked power of curing distemper in cats in the doses employed by me.

2. A mixture of sodium morrhuate solution with distemper vaccine has a remarkable power of curing the disease, even in its acute form, and even when only first administered in an advanced stage of the disease. In the absence of such treatment the disease is practically always fatal.

3. The mixture of morrhuate and vaccine was usually kept in the incubator for fifteen to thirty minutes before injection. It was always administered subcutaneously.

B.—Experiments with the Old Process Morrhuate kept for a Long Period before Use.

Between May and December 1920 several cats were attacked with the disease and died, despite treatment with the distemper-morrhuate mixture.

On my return from leave in January 1921 similar results were obtained. During that and the following month five kittens were attacked, and died despite treatment.

A characteristic bacillus was isolated from the organs of four of these kittens; cultures from the fifth remained sterile. It was noted that in one instance the microbe was obtained in pure culture from lung, liver, heart blood, mesenteric blood, and seat of inoculation with the morrhuate mixture.

One of these cultures was sent to the Kasauli Laboratory, and from it a vaccine was made, which has been used in most of my later experiments.

The above-described failure may be due to the fact that the morrhuate used was two years old. The makers, Messrs. Smith Stanistreet, of Calcutta, informed me that by this time it must have decomposed, as it was made by their old process, and morrhuate thus made only retains its properties for a few months.

C.—Experiments with Morrhuate made by the New Process.

A fresh supply of morrhuate made by the new process was obtained in April 1921. The two processes of making morrhuate will be described below.

This new process morrhuate gave by no means such good results as had been originally obtained.

Of twelve kittens and cats attacked by the disease from April to July eight died and only four recovered. Of the latter, two cats, presumably more resistant than kittens, recovered within two or three days after commencement of treatment. The two kittens that recovered only did so after one and a half and three months respectively.

D.—Experiments with Old Process Morrhuate freshly made.

A supply of morrhuate made by the old process was specially made for me by Messrs. Smith Stanistreet, and was received in October 1921. This has been administered, mixed with the Kasauli vaccin, to four kittens. These have all recovered within two days of treatment. In two instances the symptoms observed were running from the eyes. In the other two cases the only symptoms shown were weakness and complete loss of appetite.

While these kittens were being treated, another kitten living in the same cage was found in a dying condition, and succumbed in a few hours. It had no treatment.

E.—Summary and Conclusions.

Owing to the paucity of the supply of cats in Agra, it has been quite out of the question for me to attempt a research of the kind indicated by the results above described.

My suspicion that old process morrhuate was better than morrhuate made by the new process was due to a letter in the *Indian Medical Gazette* from a doctor who asserted that he had failed to get at the time such good results with morrhuate in treating tuberculosis as he had originally obtained.

Should further research show that a mixture of toxic agent with

sodium morrhuate has medicinal properties, it will be interesting to look for analogous results. A possible analogy is offered by an antidote to one of their arrow poisons used by the Bushmen of South Africa. The poison in question is made from the entrails of a small caterpillar known as the "N'gwa." It is the most virulent of their poisons, and is even used in hunting lions. The antidote consists of the caterpillar pounded up with grease. This mixture is rubbed into wounds and scratches made accidentally by the arrows. It is highly probable that the grease employed is more or less rancid. The old process morrhuate that has given the above described results is made by a process that is likely to result in a certain degree of rancidity of the product. (See *Ancient Hunters*, by Sollas, second edition, pp. 393 and 395.)

F.—Old Process of making Sodium Morrhuate used by Messrs. Smith Stanistreet & Co.

1. The cod liver oil is boiled with NaOH in dilute alcohol.
2. More water is added. The alcohol is then boiled off.
3. NaCl is added to salt out the soap.
4. The soap is separated off and mixed with an equal bulk of sand.
5. The mixture of soap and sand is dried on the water bath. This takes several days and results in much oxidation.
6. It is washed with ether to remove unsaponifiable matter.
7. The soap is dissolved in hot water. The sand settles and is removed.
8. While hot, sulphuric acid is added to decompose the soap. The fatty acid separates out. On cooling it forms a hard cake on the surface.
9. This is removed and washed two or three times with boiling water.
10. The fatty acid is dissolved in alcohol and neutralised with alcoholic soda. Phenophthalein is used as indicator.
11. It is dried on a water bath and powdered.

G.—The New Process of making Sodium Morrhuate employed by Messrs. Smith Stanistreet.

1. As in the old process.
2. As in the old process.
3. The liquid is shaken up with ether to remove unsaponifiable matter. The ether takes several days to separate.
4. The clear liquid is drawn off from the ethereal layer.
5. The fatty acid is precipitated from the soap solution with sulphuric acid while hot.

6. The fatty acid is washed two or three times with boiling water and cooled.

7. On cooling, the fatty acid forms a cake on the surface. This is removed, dissolved in alcohol, and neutralised with alcoholic soda.

8. It is dried in vacuo.

The morrhuate thus made is stated to keep indefinitely if dry. It is less liable to become oxidised and get rancid than their old product. This information was obtained from the chemical expert of Messrs. Smith Stanistreet at their factory.

THREE CASES OF DEVELOPMENTAL INTERSEXUALITY IN THE PIG

By F. A. E. Crew, M.D., D.Sc., Ph.D.
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I was enabled to examine the two specimens, A and B, through the kindness of my friend Mr. J. Howard Jones, M.R.C.V.S., of the Veterinary Department of the City of Edinburgh, who informed me that two full-grown Yorkshire pigs from the same litter and exhibiting well-marked abnormality of the external organs of generation, had been received in the abattoir. The third case, C, was reported by Major Harry Peele, M.R.C.V.S., of Durham, to whom, together with Mr. Williamson, of Brancepeth, the breeder, I am greatly indebted.

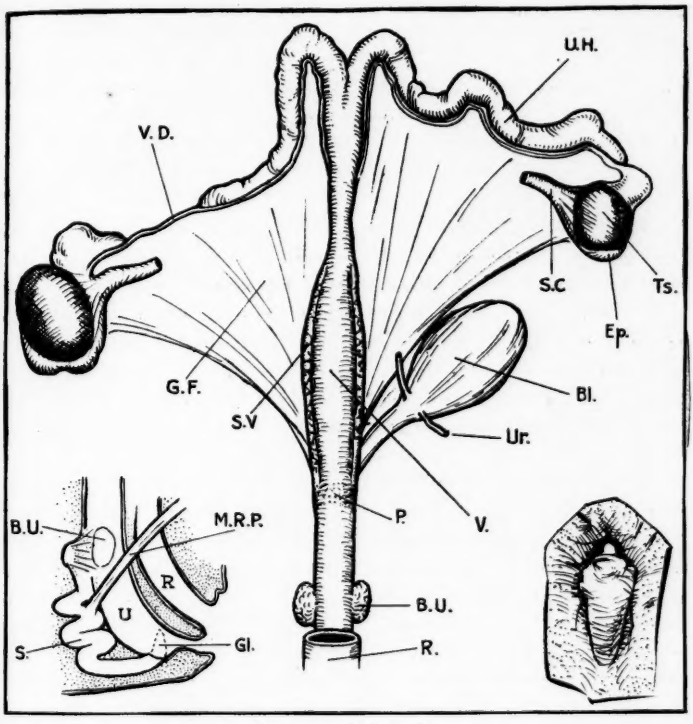
Specimen A, Fig. 1.

External Genitalia.—Ventral to the normal anal aperture was a transverse crescentic opening with a thin wrinkled dorsal lip arching above the convexity of the crescent and a ventral wall formed by a thick flattened structure with an imperforate tapering terminal portion projecting caudo-ventrally. These structures represented an abnormal erectile organ and uro-genital cleft. No scrotum was present, and the sex-glands could not be located by palpation.

Internal Genitalia.—The sex glands, intra-abdominal in situation, had the appearance of testes; that on the right side was almost spherical in outline, and had an average diameter of 3·5 cms.; that on the left was much larger ($6 \times 4 \times 3{\cdot}5$ cms.) and ovoid. The surfaces of both were marked with greatly dilated veins.

The accessory sexual apparatus consisted of an intimate mixture of male and female structures. A thin-walled uterus, $7 \times 1{\cdot}5$ cms., occupied the middle line, and its cornua stretched out in a normally disposed but poorly developed broad ligament towards the testes on either side. Epididymes, spermatic vessels, vasa deferentia, seminal vesicles, prostate, bulbo-urethral glands, and vagina were also identi-

fied. The epididymes and spermatic cords had their usual relationship with the testes, but the pampiniform plexus was markedly varicose. Each vas deferens had origin in the tail of the epididymis passed along the attached border of the uterine horn in the broad ligament, to reach the ventral surface of the body of the uterus and to enter the substance of the seminal vesicle. Each seminal vesicle (11 × 1·5 × 1), lobulated and pale pink in colour, extended the whole length



SPECIMEN A, FIG. 1.

Bl., Urinary bladder. *B.U.*, Bulbo-urethral gland. *Ep.*, Epididymis. *G.F.*, Genital fold. *Gl.*, Glans of phallus. *M.R.P.*, Retractor penis muscle. *P.*, Prostate. *R.*, Rectum. *S.*, Flexures of corpus cavernosum. *S.C.*, Spermatic cord. *S.V.*, Seminal vesicles. *Ts.*, Testis. *U.*, Urethra. *U.H.*, Uterine Horn. *Ur.*, Ureter. *V.*, Vagina. *V.D.*, Vas deferens.

of the ventral and lateral aspects of the vagina, and their ducts, together with the vasa deferentia, passed into the ventral wall of the vagina, to open into the urethra on either side of the colliculus seminalis. The prostate was but poorly defined but the pars disseminata was

demonstrated on sectioning the urethral wall. Bulbo-urethral glands, though present, were extremely small, 1·5 × 1·2 cms.

The right uterine horn, 15 cms. × 1·2, ended blindly in the region of the tail of the epididymis; the blind end of the left one (11 cms. × 1·2) did not extend to the epididymis. The body and neck of the uterus could not be distinguished, but the uterus was succeeded by a more dilated part, the vagina, 11 × 2·2 cms., which ended by fusing with the dorsal wall of the urethra in the region of the prostate. Vagina and urethra communicated by a very fine channel, which had its urethral orifice in the summit of the colliculus seminalis.

From the urinary bladder proceeded a relatively small urethra, 1 cm. in diameter, but after the junction of urethra and vagina the structure increased in size (2 cms.) and presented a thick external coat of circular muscle fibres until it reached the crura of the corpus cavernosum penis. The remaining part of the urethra, almost devoid of any muscular coat, but constituted mainly of mucous membrane and fibrous tissue, continued backwards, to terminate in an upward bend in the crescentic orifice of the external genitalia. The floor of this part of the urethra presented a cul-de-sac in the middle line, guarded on either side by a longitudinal fold of mucous membrane, and lateral to this there opened the duct of the bulbo-urethral gland. In the posterior wall of the curved part of the urethra, and about 2 cms. from the exterior, the glans of the erectile organ projected into the urethra.

The corpus cavernosum penis formed by the union of the two crura passed backwards ventral to the distal part of the urethra in a series of curves. On reaching the bend of the urethra it turned upwards and then forwards, to terminate in a laterally compressed conical glans. The anterior surface of the ventral part of this erectile organ was firmly united with the adjacent posterior wall of the urethra, while its posterior and lateral surfaces were covered by a sheath of mucous membrane, external to which was a small amount of connective tissue and skin forming the projecting structure in the ventral wall of the external genitalia.

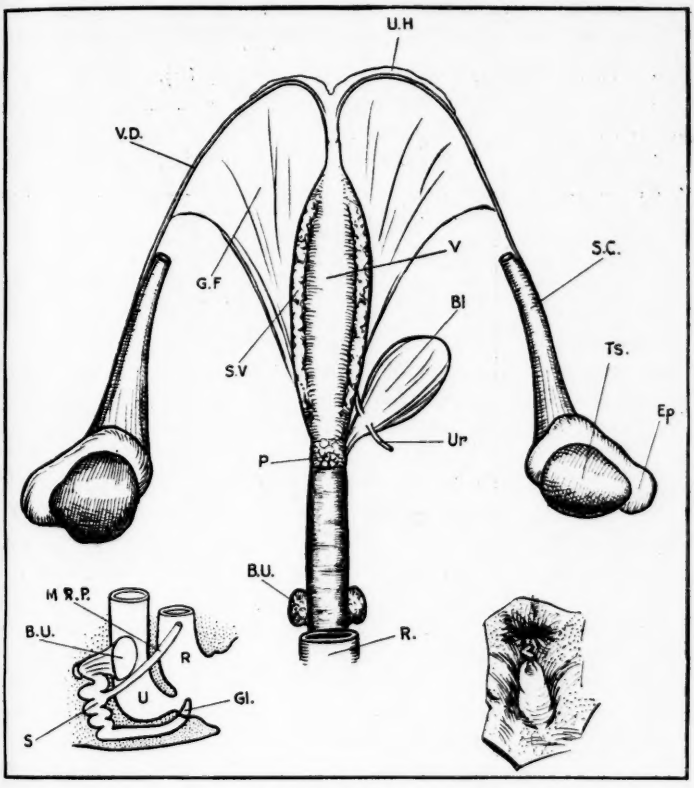
On section, the sex-glands proved to be testes, having the typical characters of a cryptorchid.

Specimen B, Fig. 2.

The external genitalia were as those of specimen A, save that the much flattened structure, ventral to the crescentic external urogenital opening, was more prominent, and that the sex-glands were extra-abdominal, though lying deep.

The sex-glands lay in the inguinal canal, and measured 5 × 5 ×

3 cms. The seminal vesicles, prostate, and bulbo-urethral glands were better developed. But the uterus in this case was far less developed than in specimen A. The uterus with a definite lumen measured only 3 cms. and had a diameter of 1 cm. The right horn, 12 × 0·4 cms.,



SPECIMEN B, FIG. 2.

Bl., Urinary bladder. *B.U.*, Bulbo-urethral gland. *Ep.*, Epididymis. *G.F.*, Genital fold. *Gl.*, Glans of phallus. *M.R.P.*, Rectractor penis muscle. *P.*, Prostate. *R.*, Rectum. *S.*, Flexures of corpus cavernosum. *S.C.*, Spermatic cord. *S.V.*, Seminal vesicles. *Ts.*, Testis. *U.*, Urethra. *U.H.*, Uterine Horn. *Ur.*, Ureter. *V.*, Vagina. *V.D.*, Vas deferens.

ended blindly far from the epididymis; the left was only 6 × 0·4. The thin-walled vagina, 14 × 3·5 cms., had the appearance of a membranous sac attached to the prominent seminal vesicles, and did not communicate with the uterus.

The erectile organ was somewhat longer than that in the previous

case, and was situated at a higher level, it did not make such a pronounced bend anteriorly so as to face the cul-de-sac in the urethra, but merely projected towards the external urethral orifice.

On section, the sex-glands proved to be testes, with the characteristic structure of an inguinal cryptorchid.

SPECIMEN C, FIG. 3.

External Genitalia.—As in the previous case (B).

Internal Genitalia.—Save for a well-marked uterus masculinus these were entirely and typically male.

Since these three cases can be arranged in a series, it is permissible to regard each as a grade of one and the same condition. Each was

SPECIMEN C, FIG. 3.

a male in which the differentiation of the sex organisation had been imperfect. It is probable that the imperfection follows from the absence of the primary activation of the testis, which during the fœtal life controls the development of the proper sex equipment. The condition is most certainly genetical in origin, and is probably the result of the chance mating of two individuals differing one from the other in the nature of the hereditary factors, which play their part in the determination of sex and in the mechanism which directs the rate of sexual development.

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It is of importance to note that these intersexual animals, which because of the imperfection of their external genitals cannot breed, are males. There is some satisfaction in this, and to avoid loss, castration should be performed in all cases at the usual age.

I am much indebted to Mr. M. R. V. Panikkar for his valuable assistance in the dissection of the specimens.

Clinical Articles

AN UNUSUAL CASTRATION COMPLICATION

By W. E. ARMSTRONG, B.V.Sc., M.R.C.V.S., D.V.H.,
Wigton, Cumberland.

A YEARLING colt was castrated on April 27th, and progressed satisfactorily until May 12th, when the owner noticed stiffness and disinclination to move.

Examination revealed the horse was stiff in the off hind leg. Temperature 103°, pulse 70 and wiry, and the belly a little tucked up. There was no change in the appetite, and the fæces were normal in quantity and pultaceous. (The animal had been on grass since the operation.) The scrotal wounds had healed, and no swelling could be palpated in the inguinal region. On rectal examination the internal rings were clear of enlargements, but a small swelling was felt, which seemed to be attached to the ilio-pubic junction. It was firm in consistence and slightly movable. The case was anything but clear, but a provisional diagnosis of pelvic peritonitis was made, and laxative diet with stimulants were prescribed. About a week later colicky pains were noticed frequently, after which small amounts of fæces were passed. The appetite was still normal. The swelling had now grown so far as to interfere with the passage of fæces, and so far as I could judge complete obstruction was threatened, so I suggested an experimental operation as the only means of attempting to save life. This was delayed until May 26th, when the animal was cast, chloroformed, and the whole of the anal and perineal region painted with Tinct. iodi. An incision was now made to the right side of the anus and 5 inches in extent. The hand was now insinuated into the perirectal tissue, and the adhesions of the tumour to the side of the pelvis were broken down with ease. The separation of the adhesions to the rectal wall proved too dense, and during this work the rectal wall was ruptured twice. After about one and a half hours' steady work, and as all the adhesions had not been separated, and the tumour still adhering to the pelvic flexure, I obtained consent to destroy the animal. This was done by severing the posterior aorta.

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A post-mortem confined to the pelvic organs was immediately made. The inguinal canals and contents were normal. The tumour had been separated from the pelvis, but was still adherent to the rectum and pelvic flexure of the large colon. The bladder had escaped involvement. The tumour was semi-solid, and in two places showed softening. These were opened and found to contain pus and necrotic tissue. They both connected with each other, and the larger one connected with the colon by a small opening. The gut was now opened, and near the opening into the gut wall, but not attached to the wall, was a single larva (*Gastrophilus hamorrhoidalis*). The hole in the bowel wall presented a punched-out appearance similar to what one sees in the stomach of horses after the larvæ are detached. An oat grain was found in the opening. Quite close to the opening three partly healed ulcers were found in the wall of the bowel, and near these an abscess containing a worm (*Strongyle*). The remainder of the abdominal organs were not examined, as the owner was none too anxious for the post-mortem to be held.

The conditions found presented one or two possibilities as to their cause. I am of the opinion that the penetrating opening was the result of the larva. It might, however, have been an abscess, which had penetrated the peritoneum, thereby setting up the local peritonitis with the subsequent adhesions.

To me this is a very interesting case, and one not without interest from a legal standpoint, on account of the possibility of alleged neglect in castrating, had not the post-mortem been done thoroughly.

A (?) similar case occurred in the practice of a friend, and which I examined during life, but no satisfactory post-morten was held. I feel confident the cases were identical.

To Mr. A. W. N. Pillers I am indebted for identifying the parasites.

DEMODECTIC MANGE IN THE DOG—IS IT CONTAGIOUS?

By HENRY GRAY, M.R.C.V.S.,
London.

Is follicular mange transmissible? I think not; at least I have never seen it conveyed by contact nor by inoculation. It is true that a litter of pups may develop it, but the parents are generally free from the disease. On the contrary, I have frequently encountered the dam with the disease and the pups remain perfectly healthy, although suckling their mother and being in contact with her until they are weaned. These facts support all negative effects when attempts are made to transmit it by inoculation. Probably the disease, being a parasitic *plus* a bacterial malady, and all the members of a litter

being affected, have led some authors *to surmise* it is a contagious malady.

It frequently arises towards the end of distemper, or appears some time after an apparent recovery from that malady. It may also arise in one dog during an attack of sarcoptic scabies or a more or less long period after the successful treatment of that complaint in a large kennel where none of the other animals have become affected with follicular mange, although all are in contact with one another.

To what extent the healthy dogs harbour in their otherwise normal skin the follicle parasite? This has not, so far as I am aware, been determined. According to the late Sir Erasmus Wilson and others, it is difficult to find human beings other than newborn infants free from an allied parasite.

The prevalence of follicular scabies seems to follow the law of periodicity of other parasitic or contagious maladies or pests. Lice on plants, the prevalence of field-mice, etc., seem to be regulated by a similar law.

As to treatment, that does not always seem difficult. Inunctions with wool fat, or bland oil, applications of weak creolin solution, and other simple agents, often cause it, even when the suppuration seems extensive and grave, to disappear rapidly. In spite of that, the skin remains pigmented, hairless, thickened and dry, and scrapings give many parasites under the field of the microscope. If one had vaccinated against the pustular or suppurative stage and got similar results, one would very likely assert that they were due to the vaccine used.

There is no doubt that a good deal of the treatment adopted for this malady aggravates it by increasing irritation, and thus setting up a rebellious dermatitis. Lysol in 2·5 to 5 per cent. solution has a detergent and sedative effect on the skin, and, as it softens the cuticle, it has a penetrating power. Lysol in similar strengths has a clearing-up effect, in a similar manner to that of caustic potash, on scrapings placed under the microscope.

IS THE DOG RELATIVELY MORE SUSCEPTIBLE TO STRYCHNINE THAN MAN?

By HENRY GRAY, M.R.C.V.S.,
London.

Most authors consider the dog is more susceptible to strychnine than man. I don't, if one takes into account the relative weight of a dog to that of man. If the dose is fixed at so much per pound, I

don't think there is any difference unless the dog can bear a greater relative dose. It is absurd to compare a dog weighing perhaps 10 lb. to a man weighing 140, 160, or more pounds. Some years ago I called attention in another place to this fact, and I believe I approximated the dose for the dog somewhere between 1,500th to 2,000th part of a grain for every pound the animal weighed. In the dog, which varies in weight from 2 lb. to 100 lb. or more, the dosage should be approximated per pound or kilogramme, as it is more practical and much safer. If your readers refer to *Youatt on the Dog*, they will no doubt find that he prescribed as much as 1 grain of strychnine. But in his case the dog was a Newfoundland, and not a miniature Pomeranian weighing 3 or 4 lbs. Repeated small doses have a much greater effect than a single maximum dose. But is there much necessity to give this drug to dogs unless one wants to run the risk of killing them and perhaps losing clients? Personally I would advise young practitioners to abstain from using it except as a last resource in paralysis of several weeks' or months' standing, as after distemper. Otherwise more harm than good is done. At least, that is the conclusion I have come to after forty years' experience.

AT WHAT AGE MAY KITTENS MANIFEST GREY RINGWORM?

By HENRY GRAY, M.R.C.V.S.,
London.

Is it possible for kittens to be infected with grey ringworm before they are born? I have seen kittens with well-marked grey or slaty ringworm due to *Trichophyton felineum* before their eyes are open. The patches, the size of a threepenny to a sixpenny piece, on the nose, head, feet, or other parts, with short stumpy hairs and of a slaty colour, appeared in several litters of kittens in the same place, and yet their parents seemed to be free of the malady. It was got rid of by washing them and their parents in a solution of sulphurated potassium twice a week for a month.

THE PREVENTIVE TREATMENT OF SOME INFECTIOUS POULTRY DISEASES IN THE NETHERLANDS

By Dr. B. J. C. te HENNEPE.,
Bacterioiogist at the State Serum Institute (Rijks Serum Inrichting, Rotterdam).

Klein Disease.

This name has been used in our country since the year 1906, and it indicates an infectious disease among chickens, which occupies

etiologically a distinct place among the other diseases prevailing in chickens in our country. In 1906 it was observed by Dr. van Straaten in our Serum Institute that there prevailed, in addition to chicken cholera, still another infectious disease of at least the same importance showing much analogy with the fowl enteritis described by E. Klein (London) in 1889, 1892 and 1896.

Now, it had already long been known that there were infectious diseases from which fowls died showing symptoms of intestinal catarrh. These were spoken of as enteritis, cholera, typhoid, or simply diarrhœa, attention being principally given to the symptoms and not to the cause. Owing to the development of bacteriological knowledge, these clinically more or less analogous diseases were differentiated. There is still a great deal of confusion due to the old names, and it will not be easy to come to an agreement in nomenclature.

From an etiological point of view, the following diseases are completely distinct, although causing similar symptoms: (1) Pestis avium, (2) gastro-entérite cholérique, (3) cholera gallinarum, and (4) the diseases caused by bacterics belonging to the colon-typhoid group. The diseases belonging to this latter group also differ. For example: (1) *Bacterium coli*; (2) *Bacterium pullorum* (Rettger), producing gas in glucose. (Recently there have been described in America strains not producing gas, and then there are with these strains a great similarity to *Bacterium Klein*.) (3) *Bacterium paratyphosum B*; and (4) *Bacterium gallinarum* (*Klein*). This latter fails also to produce gas in glucose.

In order to clearly identify this disease, we did not adopt the names fowl enteritis and enteritis gallinarum (under which names Klein described it), but preferred to use the short name, "Klein disease," and "Klein bacillus," in honour to the man who first described the disease and the bacillus so very exactly in years when bacteriology was still very young. In the beginning investigators in other countries did not adopt this name, but now, especially after our publications in the *Transactions of the World's Poultry Congress at the Hague*, 1921, it is well known all over the world; and the greatest work on animal diseases, Hutyra and Marek, in their last edition (1923) pay great attention to this subject.

Concerning this disease, described by Klein, literature gives very few details. It was very interesting for us to learn from information we got in London in the year 1916 that in England there was not much value attached to the investigations of Klein, and that only post-mortem importance was conferred on the bacterium. Were this opinion to become general in England, it would be a great mistake.

Symptoms.—The first and principal symptom is the diarrhœa, consisting of a thinnish, greenish-yellow stool. Food is refused, but the sensation of thirst is increased. Death follows, generally after about two days. Most of the cases appear in the spring and the early summer, but no season is absolutely free. The disease prevails more in adult fowls than in chicks.

The course is as a rule acute, and causes death in time, varying from a few hours up to five days. Chronic cases are rare, but when they occur they are very important from a pathological point of view.

Pathology.—With regard to fuller details I refer to the report in the called transactions and to that published in *Folia Microbiologica.* The most noticeable changes are to be found in the liver and the spleen.

Liver.—Somewhat swollen, rather sanguineous on section, showing fatty degeneration, and of weak, easily broken, consistency. *A brownish discoloration of the surface is characteristic.*

Spleen.—Swelling is generally distinctly present, accompanied with a dark red colour. The consistency of the pulpa differs but little from the normal one.

Muscular Tissue.—We observed them in a few chickens from one to twelve months old, and in a few adult birds. These changes are found in cases having a more chronic course. All the muscles of the body showed white specks on their exterior. In the muscular stomach and in the heart there were present, besides white specks, also protuberant small knobs, as in the case of tuberculosis. They were formed of extramuscular leucocyte infiltrations, without softening. The infiltration contained Klein bacteria in pure culture.

Pathogenity of Bacterium Klein.—So far as spontaneous infection is concerned, we know of it only in chickens, but white mice are even more susceptible to artificial infection than chickens. In chicken, the result of subcutaneous, intraperitoneal, or intravenous injections even of large quantities of material or culture, is very uncertain. In the laboratory we control our immune-serum always by white mice. The comatose state wherein most of the mice lie about half a day before their death is characteristic. Except for the warmth of the body and the respiration, there are no symptoms at all that they still are living. The respirations are deep and slow, sometimes with interruptions of from ten to fifteen seconds.

This disease can be compared with the following fowl diseases, all caused by immobile micro-organisms of the colon-typhoid group, not producing gas, and morphologically showing considerable analogy.

1. *Dysenteric epizootique*, described by Lucet, considered to be identical with—

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(*a*) *Typhus des gallinacés*, described by Berrion and Lemaistre.

(*b*) *Septicemie*, described by Megnin.

2. *Huhner typhus*, described by Pfeiler, Rehse and Roephe, caused by *B. typhi-gall. alcalifaciens.*

3. *Hühner typhus*, described by Kraus.

4. *Infectious leucæmia* in fowls, described by Moore, caused by *B. sanguinarium.*

5. *Fowl typhoid*, described by Smith and Fen Brock, considered to be identical with *B. typhi-gall. alcalifaciens.*

6. *Infectious disease in adult fowls*, described by Hadley, Caldwell and Heath, caused by *B. pullorum* not producing gas.

Preventive Treatment.—Klein already prepared a good vaccine. We first made investigations with our own vaccine in 1911. We inoculated birds and tried them afterwards artificially. When we got very good results, we inoculated birds and sent them in severely infected flocks. We saw the non-vaccinated hens in these flocks die and our vaccinated birds keep alright.

In 1912 experiments were carried out on a large scale in several infected districts. From October 7th-12th of that year I inoculated in the neighbourhood of Amersfoort 10,000 chickens. The operation is very easy, and I often inoculated 600 birds within an hour. Inoculating ducks is easier still, and I inoculated several times a thousand ducks within an hour.

I succeeded in overcoming this heavy epidemic, and having demonstrated that inoculation and treatment of poultry on a large scale is very easy, the veterinarians took more interest in these poultry diseases and their control.

At the same time I realised that it was necessary to be cautious in judging the results of vaccinations on such a large scale. The experiments proved that the later casualties must not always be attributed to insufficient immunity, because during the vaccinations, as well as during the examinations of the dead bodies, a very large number of cases of tuberculosis, diphtheria, and especially inflammation of the oviducts, was observed.

There is still another great danger in combating an infectious disease by means of vaccines or serum, and that is, that almost everybody is inclined to neglect the general hygienic measures when vaccination is practised. One has the greatest difficulty to convince the people that vaccinations only combat the infectious matter in the chickens, and not the infectious matter in the houses and the yards. In this respect it must not be forgotten that the duration of passive immunity caused by injection of serum is as yet very insufficiently known.

In 1912 I only used vaccine in healthy flocks and serum in diseased or suspected flocks. The week after the serum injection the birds were vaccinated.

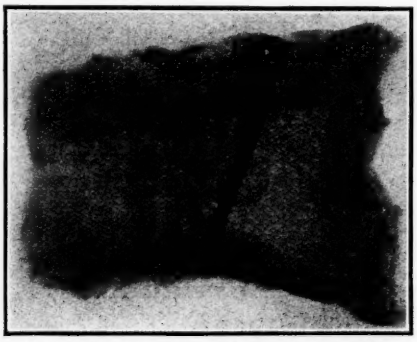
Afterwards we made investigations with injections of serum and vaccine together, at the one time, in all birds, whether healthy, suspected or ill. This method is much more practical and also very useful.

In connection with the name "vaccine," as I have used it several times in this article, I would like to observe that Professor J. R. Beach, the famous poultry specialist of Berkeley agricultural station, on pages 44 and 45 of the *National Utility Poultry Society Year Book*, 1923, speaks of vaccines and bacterins. The medium we use is a real "bacterin" in his sense of the term, because it is a suspension of bacteria, heated for one hour up to 60°C. and killed thereby.

Abstracts of Current Literature

Forssell.—Fracture of the Os Suffraginis in the Horse and Repair by Means of a Screw.—*Berliner Tierärztliche Wochenschrift*, July 5, 1923.

A SIX-YEAR-OLD Ardennes mare was brought to the Stockholm Veterinary School Clinic because of lameness in the near fore leg.



FIRST PHALANX, WITH SCREW INSERTED.

An examination led to a strong suspicion of fracture of the os suffraginis, so the parts were surrounded by ice compresses for ten days. Plain symptoms of a complete fracture were now present, and the upper external portion of the phalanx was movable. Röntgen rays showed a complete fracture. It was decided to fix the fracture with a screw. De Luyck and Frick publish a case of this kind in the horse.

and in the surgery of the dog bone suturing has been successfully done both experimentally and therapeutically.

The horse was cast on the sound side, the region of operation carefully ascepticised, and an incision made through skin, periosteum, and under-surface of the ligament. With an ordinary gimlet a hole was now bored right through at right angles to the line of fracture and well into the main body of the bone in order to fix the fracture firmly. An ordinary screw was now put in and tightened, a place having been countersunk for the head of the screw. The periosteum was closed with catgut, the skin with silk, and a dry bandage put on. Healing *per primam* occurred. The horse was slung after the operation. The mare recovered and worked for eight years after. Forssell got the leg when the mare died and took a radiograph of the part which is here reproduced.

Bru, Dr. P.—Fat Necrosis in the Dog.—*Revue Vétérinaire*, July, 1923.

STEATONECROSIS in the dog is without doubt almost always associated, as in man, with acute lesions of the pancreas. But in various cases of acute hæmorrhagic pancreatitis the presence of fat necrosis was not established. *Fat necrosis* is the word chiefly employed by German authors, and the expression cyto-steatonecrosis suggested by Dieulafoy, signifies death of fatty cells, and is made up of the Greek words : *cytos*, cellule ; *stear*, *steatos*, fat ; and *necros*, death or necrosis.

Weber.—Papillomata of the Skin in Cattle and their Significance to the Practitioner.—*Berliner Tierärztliche Wochenschrift*, No. 20, 1922.

IN opposition to the custom of many practitioners who treat warts by ligaturing and escharotics, the author adopts a different method, based on a great number of observations. According to him, warts of the skin in young cattle can be successfully operated on by twisting them off by hand, the resultant wound needing no after-treatment. The cause of papillomas is chronic irritation of the skin by dirt. Warts are not contagious ; the contagious character is assumed because of their frequent occurrence and the frequency of the determining factor, which is lack of cleanliness. No doubt certain families of cattle are especially susceptible to them. Sex and race have no influence in the matter. The favourite position of the warts is under the belly. Condition and casting of the coat may both suffer from multiple wart formation, and the warts may inconvenience the animal mechanically. Animals affected are generally three months to three

years old. Congenital and persistent warts do not occur. With the onset of maturity the warts die away.

Eberhard.—Sudden Death through Uræmia, in a Boar.—*Berliner Tierärztliche Wochenschrift*, No. 32, 1922.

A PREVIOUSLY healthy boar was found dead one morning in its sty. On post-mortem the bladder was found greatly enlarged and distended, and its neck and the ureters could only be passed by using a very thin sound. The prostate glands formed the obstructive hindrance ; they were three times the usual size, hard and solid, and generally hypertrophied, on which account no disturbance in health or difficulty in urination had been noticed. From unknown causes (probably chill and sexual irritation) there was retention of urine, with absorption of urinary constituents into the blood, causing death by heart failure.

Klesche.—Detaching the Fœtal Envelopes by the Use of Medicinal Charcoal.—*Berliner Tierärztliche Wochenschrift*, No. 38, 1922.

THIS author considers that the use of disinfectants and antiseptics injected into the uterus in cases of retention of the afterbirth is not quite satisfactory. These methods are only advisable where the secundines would come away of their own accord in the first few days or could be easily removed. In cases where the afterbirth persists it should be removed within four days at the latest, and even then success is often only partial, and more or less large pieces of the envelopes remain in the uterus and putrify and set up chronic disease. In these cases, in place of the infusion of antiseptics Klesche has used animal charcoal, since Oppermann advised it in 1918.

In cases of infectious abortion, where it has been impossible to remove all the remains of the fœtal envelopes, the complete removal of the secundines has been brought about by the use of animal charcoal. Ten to fifteen gelatine capsules filled with medicinal charcoal are introduced into the cavity of the uterus, and as soon as the ozonising effect of the charcoal comes about antisepsis and the mechanical removal of the placenta occurs. The author considers that animal charcoal constitutes the ideal method of treatment and after-treatment of retention of the fœtal envelopes.

Tuberculin and Eradication of Tuberculosis under the Accredited Herd Plan.—*Annual Report Division of Veterinary Science, University of California*, June 30, 1922.

THREE herds in the bay districts were tested under the Accredited Herd Plan, but in some cases the results of the tests were not recon-

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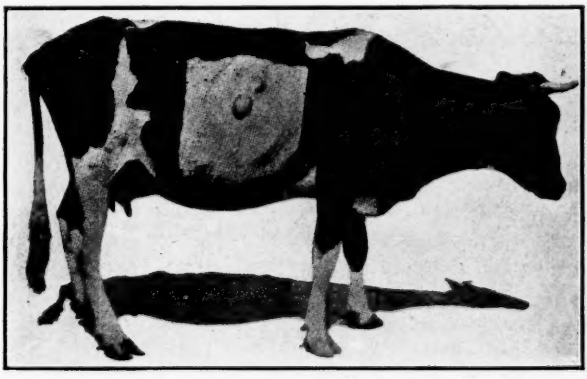
ciled by post-mortem findings. Comment is made as follows:— In the testing of these three herds two types of ophthalmic and two types of intrademral tuberculin from three sources were used. As in other cases when testing has yielded results not reconciled by post-mortem findings, we were prone to attempt explanation by blaming the tuberculin or methods of administration. We are here, however, inclined to believe that the method of preparing and dispensing tuberculin may have been at fault. In our experience, with precipitated tuberculin dispensed in powdered form and dissolved in pure water, or in physiological salt solution just prior to injection, such results have not been obtained. At any rate, the outstanding fact in our estimation is the need for critical study of the method of manufacturing tuberculin with a view to standardising this process throughout the United States, so that tuberculin may be eliminated with reasonable certainty as a possible factor in such results.

Besnoit and Robin, B.—Subcutaneous Tuberculosis in a Cow.— *Revue Vétérinaire*, July, 1923.

THE subject was an old Dutch cow. Its general state middling; very thin, staring coat, skin adherent to the sides, frequent cough.



SUBCUTANEOUS TUBERCULOSIS.
(The skin has been shaved to make tumours more apparent.)

Did not react to tuberculin. Accessible glands suspect; auscultation revealed lungs and pleura affected. Swellings in the right thoracic region. One of them situated towards the inferior extremity of the ninth rib was oblong in form, flattened, and of firm consistence. Three others were situated at the posterior edge of the eleventh rib. Spherical in shape, about the size of a hen's egg, and fluctuating. The skin was adherent to their surfaces, and in one thin and depilated,

like an abscess ready to open. Puncture of a swelling furnished yellowish, creamy, semi-liquid pus, containing numerous calcareous granules. Microscopic examination, Ziehl stain, revealed Koch's bacili in large numbers.

Post-mortem showed that the sub-dermic state was only the localisation of a very generalised tuberculosis. This is nothing new, for with the exception of Pérard and Vittoz no authors have ever confirmed primitive tuberculosis. The mode of extension of the tuberculous process was noteworthy: tuberculosis had invaded the subcutaneous cellular tissue by progress from a deep collection of pus, and the initial superficial abscess was only a diverticulum of a subpleural pocket of pus. The bacilli had utilised the subcutaneous lymphatic system to emigrate on to the thoracic wall at neighbouring points. These pyogenic cavities with a tendency to softening resemble the large tuberculous gummata seen in man, and they are without doubt due to an exceptional virulence of the bacillus. Subcutanous signs of tuberculosis are always due in our animals to very attenuated bacilli. A rigorous prophylaxis ought to be exercised with such subjects, for when the lesions once ulcerate they scatter on their surroundings enormous quantities of virulent germs.

"How the Organisation of Danish Agriculture has Affected the Hygiene of the Nation."—*Abstracts from the Second Chadwick Public Lecture, by Mr. Nugent Harris, Royal Sanitary Institute.*

FORTY per cent. of Denmark's aggregate population, which numbers 3,000,000 people, subsist on agriculture.

In the summer of 1914 the live stock consisted of 567,000 horses, 2,463,000 head of cattle (including 1,310,000 head of dairy cattle), 2,497,000 pigs, and 15,130,000 fowls.

In 1922 there were in all 2,286,00 head of cattle, of which 1,113,000 are milch cows, a somewhat lower figure than that of 1914; but of course it has not been the poorest animals which have been preserved, but quite the contrary. The quantity of milk is now almost the same as it was before the war.

Industrial conditions applied more to pig-breeding than to any other branch of agriculture, and it was therefore a natural consequence that it should be hard hit by the blockade. But here again special stress was laid on the necessity of keeping the best breeding animals, and these endeavours were crowned with success, so that the number of pigs is now fully one and a half million as compared with only about 513,000 in 1918.

As to egg production, this became very important during the war, especially for farming in a small way. Here again Danish

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agriculture hopes soon to be able to produce about 500 million eggs annually, and these, together with 300 million which are eaten in Denmark, constitute the country's total production of eggs. Buyers for this produce are to be found everywhere.

Denmark has become famous for the uniformity and purity in the quality of its main lines of production—butter, bacon, eggs, and, in recent years, cheese. The successful development of its agriculture has also tended to prevent that migration from the rural districts to the towns. The following figures bear striking testimony to this :—

The population of Denmark in 1921 was 3,267,831, of which 1,859,965 lived in the rural districts. This shows an increase of 145,578 over the previous five years, and of 209,615 in the ten years 1911–1921. The men and women about balance in the rural districts.

TUBERCULOSIS OR, AS THE DANES CALL IT, ENGLISH SICKNESS. —In a recent report by The Danish National Society for Fighting Tuberculosis, satisfaction is expressed at the considerable decrease in the number of cases of tuberculosis in Denmark during the last generation, and Professor Faber, in submitting the report, said the tuberculosis mortality figures were now the lowest on record—50 per cent. less than those of thirty years ago—and were second only to those of Scotland, and he gave it as his views that in a few years Scotland would be beaten. One of the directors of the Society—Dr. Ostenfield—in speaking of the report, stated that 80 per cent. of the patients in the sanatoria for which they were responsible had been discharged during the year with positive results. The report states that a deficit of 1,293,474 Krone made on the sanatoria during the year was met by the State.

THE NATIONAL CLEAN MILK SOCIETY

THE National Clean Milk Society has convened a National Milk Conference—subject, Pasteurization—to be held on Wednesday, November 21, 1923, in the Council Chamber, the Guildhall, E.C., is supported by a large number of influential Societies. The National Veterinary Association is one of its supporters, and it is hoped that members of the veterinary profession will attend. Papers will be read on :—

1. Methods and Processes of Pasteurization.
2. Physical Changes (Cream Line, etc.).
3. Chemical Changes (Salts, etc.).
4. Bacteriological Changes.
5. Bio-chemical Changes.
6. Financial and Commercial Aspect.

Further particulars can be obtained from the Secretary, 3 Bedford Square, London, W.C. 1.

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Personal

Mr. W. W. Lang, M.R.C.V.S., of Brigg, Lincolnshire, recently met with a serious motor accident and sustained a nasty fracture of the patella. His friends will wish him as speedy a recovery as possible.

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